

SEMICONDUCTOR DEVICES AND METHODS FOR FABRICATING THE SAME

Abstract of the Disclosure

5 In a semiconductor device with a via contact including a barrier metal layer and a method for fabricating the same, a lower metal interconnection is formed over a substrate. An ILD is formed on the lower metal interconnection and has a lower barrier layer and an upper barrier layer that have an etch selectivity with respect to each other. An upper metal interconnection is
10 formed over the ILD and is separated from the lower metal interconnection by the ILD. A via contact plug penetrates the ILD to connect the lower and upper metal interconnections. The via contact plug is formed such that a portion crossing the lower barrier layer is formed to have a greater width as compared to a portion crossing the upper barrier layer. The barrier metal layer, which is
15 formed to encompass sidewalls and a bottom of an inner metal layer of the via contact plug, forms a discontinuous part which does not exist at the portion crossing the lower barrier layer. Thus, the inner metal layer of the contact plug is in direct contact with the lower metal interconnection. The upper and lower barrier layers are layers that serve as a barrier to copper, such as a silicon
20 nitride layer or silicon carbide layer. However, the upper and lower barrier layers are composed of different material layers so as to have etch selectivity with respect to each other.

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